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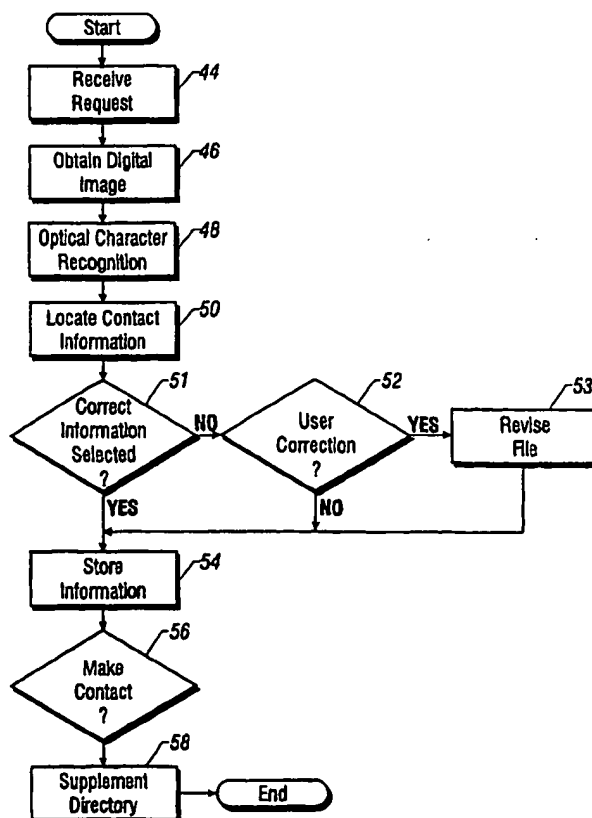
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(54) Title: DISPLAY CAPTURE SYSTEM

(57) Abstract

A computer system captures information from a television display digital signal. The digital signal is subjected to optical character recognition to allow the computer system to recognize characters displayed on that screen. The character information is then scanned for desired patterns associated with contact information. Once the contact information has been isolated, it may be stored or an immediate contact may be automatically implemented.



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Display Capture System5 Background

This invention relates generally to computers, and in particular embodiments to capturing information from television or computer displays.

Personal computers are now moving into the arena previously occupied by television receivers. The so-called set top personal computers interact with television receivers to
10 provide advanced programming functions, digital television and other functions normally associated with personal computers, such as internet access and games. Thus, users of the set top personal computers may have at their disposal both a television capability and the capability normally associated with the personal computer. The set top personal computers use the television screen as the display both for the computer system and the television
15 receiver.

Computers may also display television pictures on a computer display or monitor. A tuner card in the computer acts as a television receiver so that a television program may be viewed on a computer monitor.

Contact information is commonly displayed in television programming, particularly in
20 television advertising. Many viewers have difficulty in recording contact information because, by the time they locate pencil and paper, the information is no longer displayed. Thus, advertisers may lose important opportunities and viewers may miss desirable information.

Similarly, some contact information may be displayed as a graphical image (ie. in
25 graphics rather than text mode) on an Internet web page. This may be the case where elaborate fonts or graphical displays are desired, for example with trademarks.

It would be desirable to enhance the ability of a user of a computer system to retain non-textual information from a display.

30 Summary

In accordance with one aspect, a method for obtaining information from an image signal using a computer includes obtaining a digital representation of a display image. Characters in the image are recognized and the desired content within the image is located.

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Brief Description Of The Drawing

Figure 1 illustrates the display screen of a television showing an advertisement;

Figure 2 is a file captured from information on the screen shown in Figure 1;

5 Figure 3 is a file containing information captured from the screen shown in Figure 1;

Figure 4 is a block diagram showing a computer system for implementing one embodiment of the present invention; and

Figure 5 is a flow chart showing a flow for one embodiment of the present invention.

10 Detailed Description

Images containing contact information may be captured from a television picture or a computer display and manipulated by a computer system to facilitate contact with the broadcast content provider, which may be the advertiser on a television program. For example, television advertisers commonly broadcast advertisements like that shown in Figure 15 1 which display a variety of information about their products. These advertisements may also include contact information such as names, addresses, telephone numbers and universal resource locators (URLs) which may be utilized to contact the advertiser or other content provider.

A computer monitor display may also include images that include contact information 20 in an image or graphics mode, for example using bit mapped graphics, rather than a text mode. The contact information may be included as part of an Internet web page, for example.

In accordance with one aspect, the signal information that produces the image on the television or computer display 10 is digitally captured. For example, the telephone number depicted on the display 10 shown in Figure 1 may be recorded and provided in the form of a 25 digital file 12 as indicated in Figure 2. Similarly, additional information from the screen 10 may be captured and placed in an appropriate field 15 according to the type of contact information.

Software may use logical heuristics to determine which information constitutes a person's name, which information constitutes a company name, which information 30 constitutes an address, which information is a phone number and which information constitutes an Internet URL. Common characteristics of each of those fields may be stored in

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a program to determine whether or not a given piece of information belongs in a particular field.

Referring to Figure 4, a set top computer system 15 includes a processor 16 connected to system memory 18 and a north bridge 20. The north bridge 20 may conventionally connect to a bus 22 which may in turn be coupled to a display controller 24 which is in turn connected to a television 25. The bus 22 may also connect to a south bridge 26. The bridge 26 may couple a hard disk drive 28 which may contain one or more programs 30 and 31 which, in the illustrated embodiment could be an optical character recognition (OCR) and a telephone/address directory program.

The south bridge 26 in turn connects to a bus 32 which may connect to a serial input output (SIO) port 34. The port 34 may connect to a keyboard 36, a telephone dialer 40 and a modem 38. The basic input output system (BIOS) 42 may also be connected to the bus 32. Of course, other implementations are possible and various additional components and peripherals may be connected to a conventional set top computer system.

Referring now to Figure 5, the computer system 15 initially receives a request for capture services as indicated in block 44. This may be the result of the user clicking on a button on a display screen 24 or by activating a particular hot key on the keyboard 36. This request is interpreted as a request to capture information from the television display. The image displayed at the time of the request may be digitally captured as indicated in block 46 through the operation of the processor 16. The captured digital image is then subjected to an optical character recognition conversion, as indicated in block 48, using the optical character recognition software 30. This software scans the information in the digital image and identifies and associates the image shapes with known characters such as numbers and letters. It then provides a text mode representation of the image or graphics mode data.

The computer system uses heuristics to locate information which corresponds to contact information styles, as indicated in block 50. For example, numbers followed by letters may be recognized as addresses while pairs of words with capital letters may be recognized as names. Common first names may be stored in a database to help determine that a personal name is involved. Similarly, particular sequences of numbers may be recognized as telephone numbers and certain letter sequences may be recognized as URLs.

Once the contact information has been identified, it may be displayed to the user, for example, on the display screen, and the user may check the displayed information to insure

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that the desired information was captured, as indicated in block 52. The user can insert corrections in a corrections window (block 52) and the contact information is revised (block 53). For example, if two telephone numbers are returned, the user can indicate which telephone number is desired.

5 The selected contact information may then be stored in memory 18 or on the hard disk drive 28, as indicated in block 54. In some cases, it may be desirable to then make contact, as indicated in block 56, using the contact information. The dialer 40 may be automatically activated to call the stored telephone number. Alternatively, where a URL has been identified, the modem 38 may be used to automatically contact an appropriate Internet service
10 provider and to obtain the desired web page.

 Contact information that has been captured off of the television display may then be automatically added to the database of conventional software 31 that compiles contact information, such as software telephone or address directories. Once the information has been identified and placed in the appropriate fields it can be supplied to such software
15 directories for later use, as indicated in block 58. These directories may provide searching and autodialing capabilities and the like.

 The computer system 15 determines whether the telephone number is either a local number or a long distance number by comparing any area code with a predetermined local area code. If the call is a long distance call, a dialing prefix may be added.

20 The present system facilitates making contact with information providers who provide content such as advertising over television broadcasts or graphics mode information on web pages. It also facilitates storing such contact information in contact software such as address or telephone directory software.

 While the present invention has been described with respect to a single embodiment,
25 those skilled in the art will appreciate numerous modifications and variations therefrom. It is intended that the appended claims cover all such modifications and variations as fall within the true spirit and scope of the present invention.

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What is claimed is:

- 1 1. A method for obtaining contact information from an image signal using a
2 computer, comprising:
3 obtaining a digital representation of a display image;
4 recognizing characters in said image; and
5 locating contact information in said characters.
- 1 2. The method of claim 1 including locating a telephone number in said
2 characters and automatically dialing said telephone number.
- 1 3. The method of claim 1 including locating an Internet address in said characters
2 and automatically contacting said Internet address.
- 1 4. The method of claim 1 including storing said contact information on the
2 computer.
- 1 5. The method of claim 1 including providing the contact information to the user,
2 allowing the user to alter the contact information and revising the contact information
3 according to information from the user.
- 1 6. The method of claim 1 including recognizing a user command, and upon
2 receipt of the user command obtaining a digital representation of the display image being
3 displayed at the time the user command is received.
- 1 7. The method of claim 1 wherein said contact information includes a telephone
2 number.
- 1 8. The method of claim 1 wherein said contact information includes an Internet
2 address.

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1 9. The method of claim 1 including automatically adding said contact
2 information to a software address directory.

1 10. The method of claim 1 wherein the obtaining step includes obtaining a digital
2 representation of a television display image.

1 11. The method of claim 1 wherein the obtaining step includes obtaining a digital
2 representation of a computer display image in graphics mode.

1 12. A computer system comprising:
2 a processor;
3 memory coupled to said processor;
4 an input device coupled to said processor;
5 a television receiver coupled to said processor to display television programs; and
6 an optical character recognition device arranged to scan signal information for generating a
7 television picture and to identify contact information in said signal information.

1 13. The system of claim 12 including a telephone dialer coupled to said processor.

1 14. The system of claim 12 including a modem coupled to said processor.

1 15. An article comprising a computer readable medium storing instructions to
2 enable a computer to:

3 obtain a digital representation of a display image;
4 recognize characters in said image; and
5 locate contact information in said characters.

1 16. The article of claim 15 wherein said medium stores instructions to enable a
2 computer to recognize a user command and obtain a digital representation of a display image
3 being displayed at the time the user command is received.

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1 17. The article of claim 15 wherein said medium stores instructions to enable a
2 computer to locate a telephone number and automatically dial said number.

1 18. The article of claim 15 wherein said medium stores instructions to enable a
2 computer to locate an Internet address and automatically contact said Internet address.

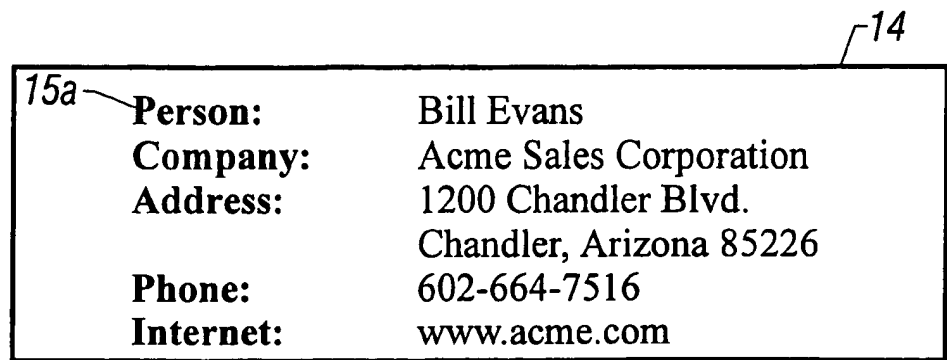
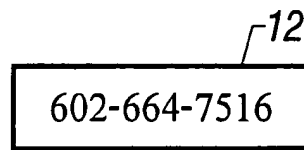
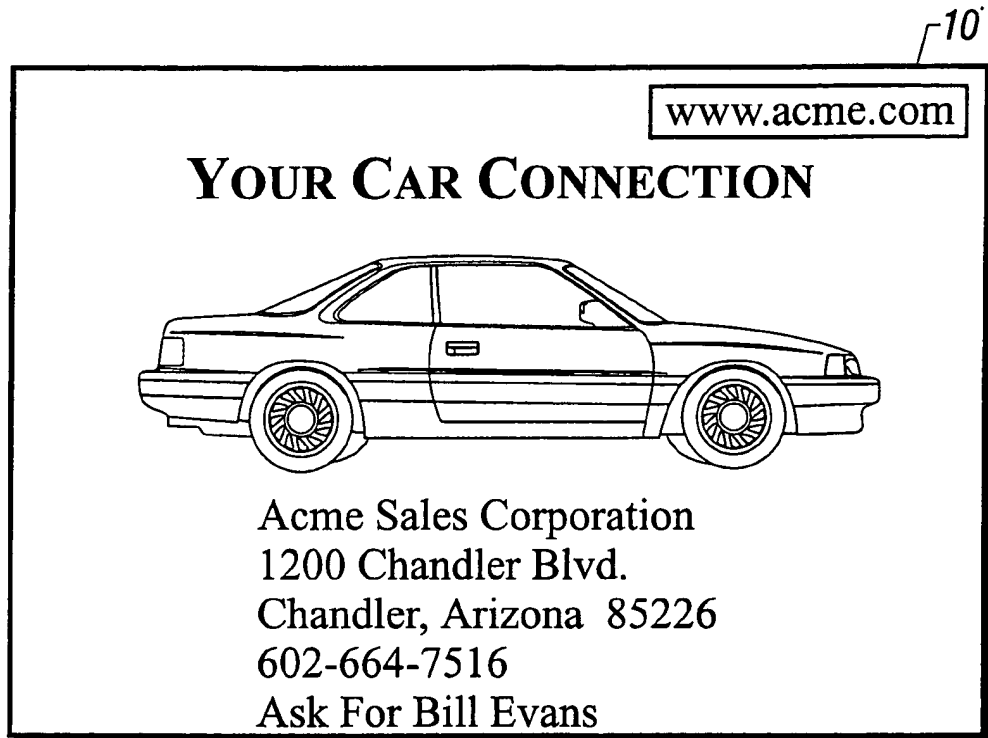
1 19. The article of claim 15 wherein said medium stores instructions to enable a
2 computer to store said contact information.

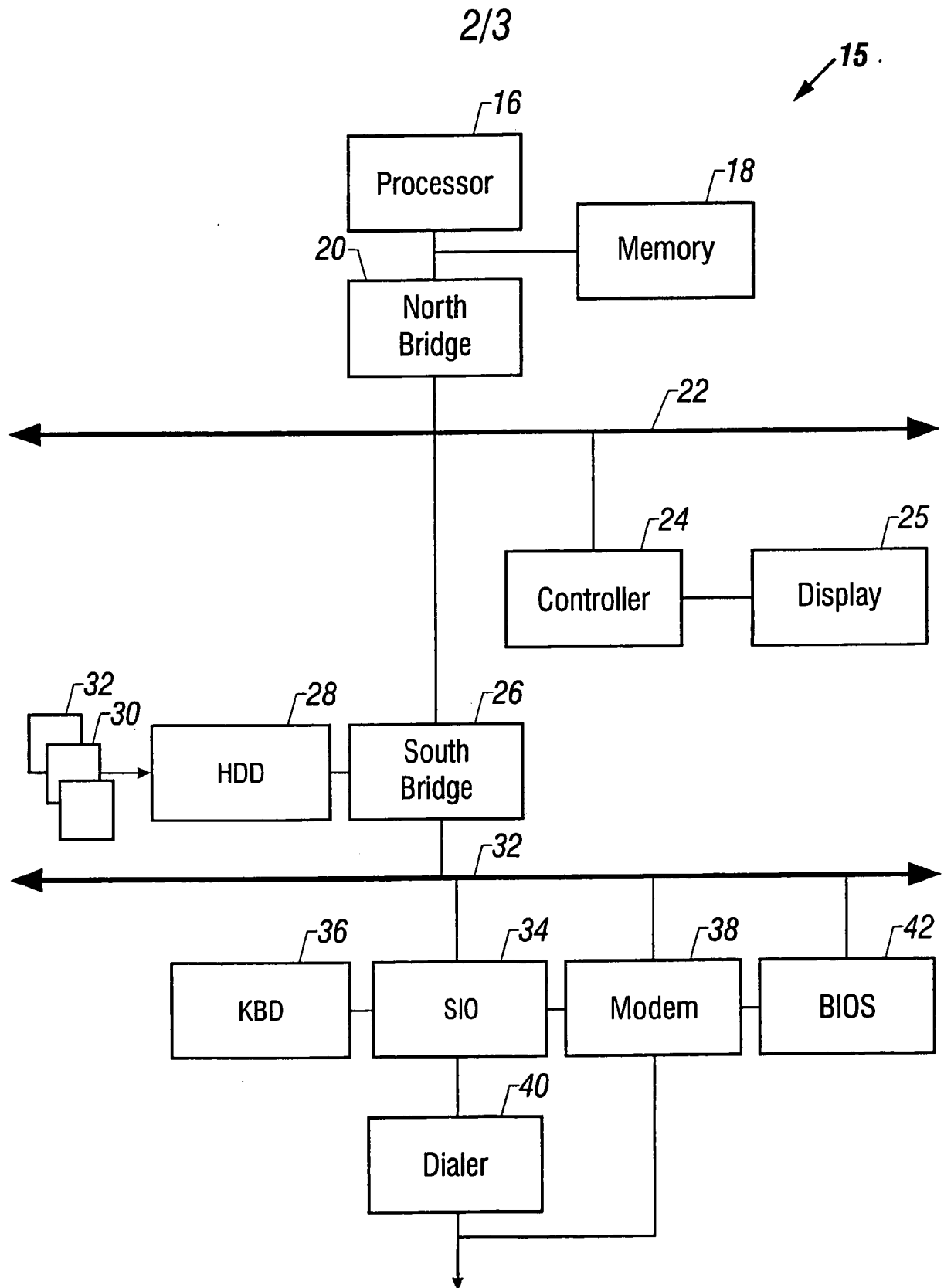
1 20. The article of claim 15 wherein said medium stores instructions to enable a
2 computer to provide the contact information to the user, allow the user to alter the contact
3 information and revise the information according to information from the user.

1 21. The article of claim 15 wherein said medium stores instructions to enable a
2 computer to automatically add said contact information to a software address directory.

1 22. The article of claim 15 wherein said medium stores instructions to enable a
2 computer to obtain a digital representation of a television image.

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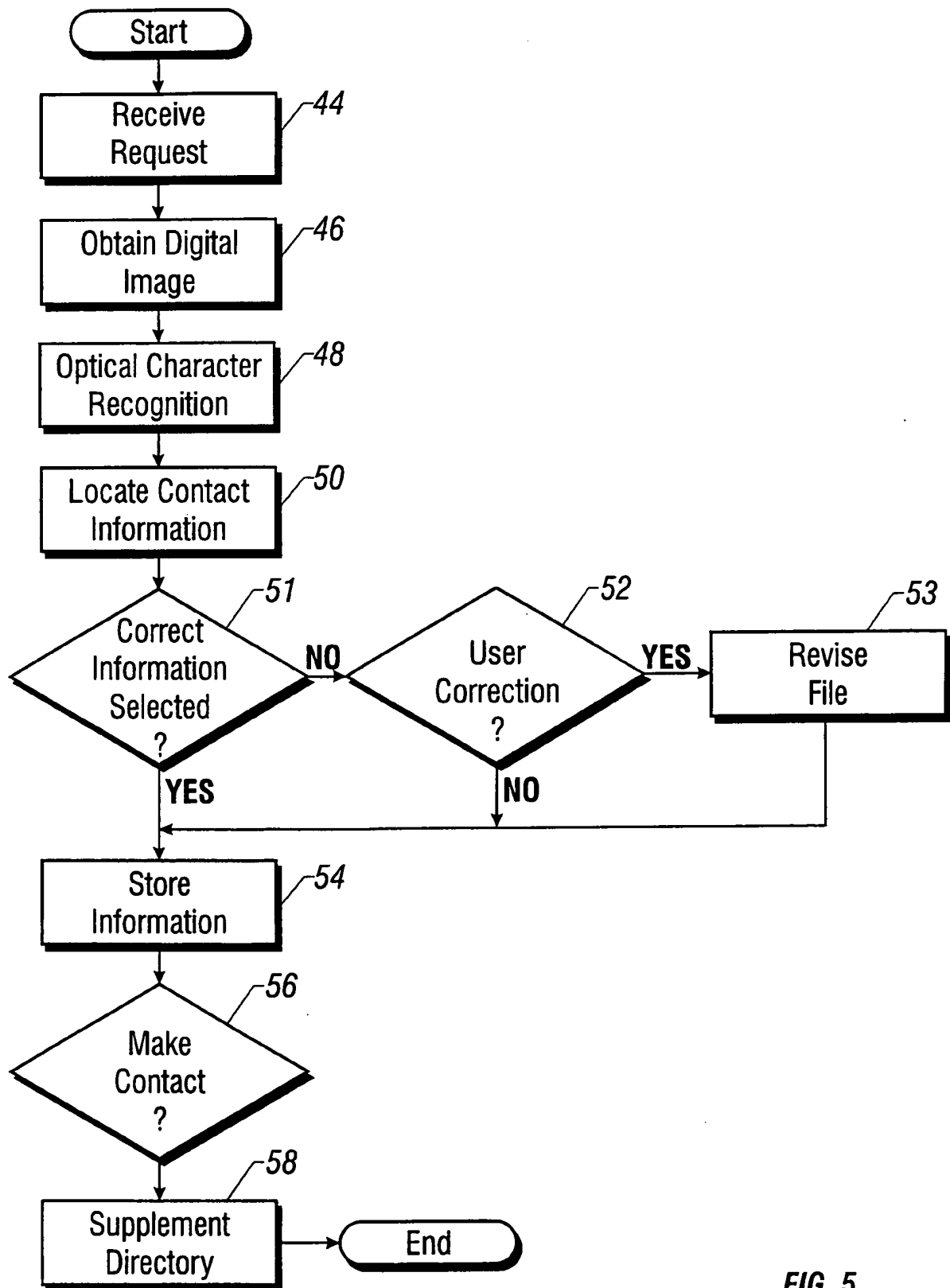


FIG. 5

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/13734

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06K9/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 720 114 A (SIEMENS CORPORATE RESEARCH) 3 July 1996 (1996-07-03) abstract; figures 1A-1H	1-22
Y	PANDIT M S ET AL: "THE SELECTION RECOGNITION AGENT: INSTANT ACCESS TO RELEVANT INFORMATION AND OPERATIONS" IUI '97. 1997 INTERNATIONAL CONFERENCE ON INTELLIGENT USER INTERFAC, ORLANDO, JAN. 6 - 9, 1997, 6 January 1997 (1997-01-06), pages 47-52, XP000731429 MOORE J; EDMONS E; PUERTA A (EDS) ISBN: 0-89791-839-8 the whole document	1-22

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 720114	A	03-07-1996	NONE